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ABSTRACT

One of a set of fourteen instructional outlines for use in a course to train novice firemen, this guide covers firefighting procedures and principles. Emphasis is placed on pre-fire planning, the techniques for applying a plan to a course of action, and the selection of proper fire fighting procedures to meet specific needs. Besides the methods of sizing up a fire's situation, the various firefighting operations such as rescue, exposure protection, ventilation, extinguishment, salvage, and overhaul are described. This outline is to be used in conjunction with the International Fire Service Training Association's manual, "Fire Department--Facilities, Planning, and Procedures" (see note). (An outline of the whole course covering all fourteen topics briefly is provided in the first volume of the set--CE 016 662.) (EIG)

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FIP 3009

Firefighting Procedures

FIRE SERVICE TRAINING

FIREFIGHTING PROCEDURES

Revised

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FIRE FIGHTING PROCEDURES

PURPOSE AND SCOPE

The purpose of this outline is to promote better fire protection by providing general information concerning fire fighting procedures. There are accepted procedures and principles that can be applied to almost all fires. While these procedures may not be exactly identical for every fire situation, they are similar enough in principle that it behooves every firefighter and fire officer to become familiar with them.

It is the intent of this outline to further encourage pre-fire planning, to discuss ways and means of applying a plan to a course of action, and to provide a system by which fire fighting procedures may be selected, applied, and improved upon to meet the needs of a local situation.

The scope of this outline covers those things that a fire officer and/or firefighter should consider and do during his response to a fire, his size-up of a situation, his decision, and his plan of operation. The scope further includes those operations that may or may not be needed at every fire occurrence such as rescue, exposure protection, ventilation, extinguishment, salvage, and overhaul.

This outline was developed to be used in conjunction with the International Fire Service Training Association's Manual Fire Department - Facilities, Planning, and Procedures.

COURSE OUTLINE	GUIDES

I. Introduction.

A. Definition of procedure - A course of action or a system of performing, operating, or conducting a series of actions. Fire fighting procedures are performances that affect other functions of a fire department and should be performed systematically. They should consist of operations that are performed in sequence to accomplish a desired result.

B. Relationship of procedures to pre-fire plans.

1. Pre-fire planning equals planning for fire fighting procedures.

2. Pre-fire plans equal starting points from which fire fighting procedures can be directed.

3. Fire fighting procedures may be governed by pre-fire plans.

C. Relationship of procedures to training.

1. Fire fighting procedures are directly related to training.

2. Fire fighting procedures will be carried out just as successfully as firefighters have been trained.

D. Relationship of procedures to fire company operations.

1. Where fire departments adopt definite techniques and operations, fire fighting procedures can be planned and carried out by companies successfully.

COURSE OUTLINE	GUIDES
2. Company operations involved in fire fighting procedures. (a) Receiving alarm. (b) Responding to alarm. (c) Point of operation. (d) Rescue. (e) Layout. (f) Line advancement. (g) Exposure protection. (h) Ventilation. (i) Salvage. (j) Attack. (k) Confinement. (l) Extinguishment. (m) Overhaul. E. Relationship of procedures to multiple company operations. 1. All companies. 2. Pumper companies.	

COURSE OUTLINE	GUIDES
3. Ladder companies.	
4. Special companies.	
F. Relationship of procedures to inter-departmental operations.	
II. Fire Company Dispatch and Response.	
A. Fire company dispatching.	Fire Dept. - Fac., Plan., Proc. P. 84
1. Running cards.	
2. Pre-fire plans.	Fire Dept. - Fac., Plan., Proc. P. 48, 49, 62, 63, 64, 65, 66, 67
B. Alarm assignment.	
1. First alarm assignment.	
2. Multiple alarm assignment.	
3. Subsequent alarm assignment.	
4. Factors which assist in determining number of companies for an alarm assignment.	
III. Known facts and anticipation of the situation.	
A. Fire location and environment.	
1. Address.	
(a) Street location.	
(b) Building number.	

COURSE OUTLINE	GUIDES
2. Access to area and building. (a) Routes (b) Barriers or obstructions. (c) Traffic conditions. 3. Building description (a) Condition. (b) Occupancy. (c) Construction and size. (d) Fire walls and doors. (e) Private protection. 4. Nature of contents. (a) Fast or slow burning. (b) Explosives. (c) Toxic material. (d) Hazardous chemicals. (e) High expansion or absorbant materials. B. Exposure. 1. Buildings. 2. Materials.	

COURSE OUTLINE	GUIDES
C. Life hazard. 1. Occupancy. 2. Number of occupants. 3. Age and physical condition of occupants. D. Physical surroundings. 1. Roads. 2. Railroads. 3. Streams. 4. Bridges. 5. Fences. 6. High voltage lines. E. Nature of situation. 1. Fire. 2. Explosion. 3. Radioactive materials. 4. Rescue. 5. Other disaster. F. Time.	

COURSE OUTLINE	GUIDES

1. Time of day.

2. Day of week.

3. Month of year.

G. Weather.

1. Temperature.

2. Wind direction and velocity.

3. Relative humidity.

4. Weather conditions.

H. Fire department's situation.

1. Method of receiving alarm.

2. First alarm assignment.

(a) Number of personnel.

(b) Type and number of apparatus.

(c) Type of equipment.

(1) Hose.

(2) Master stream appliance.

(3) Ladders.

3. Additional fire fighting assistance available.

(a) Greater alarm assignment.

COURSE OUTLINE	GUIDES
(b) Off-duty personnel. (c) Specialized equipment. (d) Mutual aid. 4. Additional support assistance. (a) Police. (b) Ambulance. (c) Water department. (d) Utility personnel. (e) Private concerns. 5. Water supply. (a) Location, size and pressure of mains. (b) Hydrant location and flows available. (c) Loops, gridirons, or dead ends. (d) Static sources. (e) Private water supplies. (f) Private water system. (g) Tankers. (h) Volume and number of streams required. (1) Protect life.	

COURSE OUTLINE	GUIDES
(2) Protect exposures. (3) Confine fires. (4) Extinguish fires. 6. Private protection. (a) Standpipe system. (b) Sprinkler system. (c) Yard hydrants. (d) Other fire control devices. IV. Arrival and Size-Up. A. Immediate action. 1. Previous commitments. (a) Commitments of fire companies in accordance with pre-fire plans. (b) Commitments of fire companies in accordance with standard operational procedures. 2. Immediate requirements. (a) Rescue requirements. (b) Fire requirements.	

COURSE OUTLINE	GUIDES
3. Future course of action usually based upon. (a) Previous actions. (b) Supplemental developments.	
B. Rescue or evacuation. 1. Fire consideration at a fire or other emergency. 2. Rescue capabilities of fire department. 3. Panic and rescue. 4. Probable life hazards. (a) Occupants (hospitals, schools, churches, etc.). (b) Personnel (office buildings, factories, etc.). (c) Spectators. (d) Fire department personnel. 5. Rescue or evacuation situations. (a) Electrical. (b) Cave-ins. (c) Floods. (d) Panics.	Fire Service Rescue and Protective Breathing Prac.

COURSE OUTLINE	GUIDES
(e) Storms. (f) Drownings. (g) Gaseous areas. (h) Fires. 6. Available assistance. (a) Fire and re· ue equipment. (b) First aid workers. (c) Disaster plans. (d) Volunteer or call men. (e) Mutual aid. (f) Industrial fire brigades. 7. Contributing factors. (a) Weakened structure. (b) Open shafts or pits. (c) Gaseous areas. (d) Man-traps. (e) Explosions. (f) Falling walls. C. Exposure protection. 1. Exposure hazard factors.	

COURSE OUTLINE	GUIDES
(a) Building combustibility. (1) Combustible construction. (2) Fire resistive construction. (b) Building size. (1) Height in stories, in feet. (2) Area in square feet. (c) Distance between buildings. (1) Open space between buildings, clear of combustibles. (2) Parapeted fire walls without openings. (3) Fire resistive walls with protected openings. (4) Non-combustible roofs. (5) Outside open or automatic sprinklers. (d) Wind. (1) Direction. (2) Velocity. (e) Humidity. (f) High temperatures. (g) Heat quantity.	

COURSE OUTLINE	GUIDES

2. Sources of ignition.

   (a) Radiated heat.

   (b) Direct flame.

   (c) Flying brands (sparks).

3. Fire protection.

   (a) Building spacing.

   (b) Fire walls, parapets and openings.

   (c) Non-combustible roofs.

   (d) Fire streams. (NOTE: Instructor should explain thoroughly when, where and how fire streams should be used and the advantages of fog patterns.)

   (e) Outside and inside sprinklers.

D. Course of action. (NOTE: Water supplies and fire hydrant distribution is a major factor in discussing the course of action.)

1. Use of.

   (a) Sprinklers.

   (b) Standpipes.

   (c) Pre-fire plans.

   (d) Special equipment.

2. Position of apparatus and equipment.

COURSE OUTLINE	GUIDES
(a) Aerials.	
(b) Elevating platforms.	
(c) Pumpers.	
(d) Master streams.	
(e) Hand streams.	
(f) Hard ladders.	
(g) Adequate hose supply.	
E. Forcible entry.	Forcible Entry, Rope and Portable Extinguisher Practices
1. Means of entrance.	
(a) Doors.	
(b) Windows.	
(c) Breaching.	
2. Precautions.	
(a) Backdrafts.	
(b) Man-traps.	
(c) Damage (unnecessary).	
F. Ventilation.	Fire Ventilation Practices
1. Ventilation needs.	

COURSE OUTLINE	GUIDES

(a) Smoke.

(b) Gases.

(c) Heat.

2. Where to ventilate.

(a) Vertical.

(b) Horizontal.

3. How to ventilate.

(a) Openings.

(b) Forced air.

(c) Water fog.

4. Precautions.

(a) Breathing equipment (self-contained).

(b) Charged hose lines in place.

(c) Fire spread.

(d) Exposures.

5. Ventilation decisions.

(a) Is there a need for ventilation at this time?

COURSE OUTLINE	GUIDES
(b) Where is ventilation needed?	
(c) What type of ventilation should be used?	
G. Salvage.	Salvage and Overhaul Prac.
1. Salvage need.	
(a) Water damage.	
(b) Smoke damage.	
(c) Heat damage.	
(d) Flame damage.	
2. Volume of contents.	
(a) Merchandise.	
(b) Furnishings.	
(c) Records.	
3. How accomplished.	
(a) Use salvage covers.	
(b) Control water.	
(c) Move materials.	
4. When accomplished.	

COURSE OUTLINE	GUIDES
(a) During fire.	
(b) After fire.	
Note: The need for forcible entry, ventilation, and salvage operations may be apparent any time during a fire fighting procedure. They must be considered in a system of size-up, but the time of their consideration has no relationship to the place where they are herein discussed.	
V. Attack, Confine, and Extinguish.	
A. Attacking the fire.	
1. Type of fire.	
(a) Fuel involved.	
(b) Incipient or first phase.	
(c) Flame-producing or second phase.	
(d) Smouldering or third phase.	
2. Water application.	Fire Stream Practices
(a) Direct.	
(b) Indirect.	
(c) Solid stream.	
(d) Fog stream.	

COURSE OUTLINE	GUIDES

3. The three-position approach.

   (a) Exposures.

   (b) Avenues of spread.

      (1) Horizontal extension.

         a. Through wall openings by direct flame contact or by convected air currents.

         b. Through open space by radiated heat or by convected air currents.

         c. Through corridors, halls, or passageways by convected air currents, radiation, and flame contact.

         d. In all directions by explosion of flash burning of fire gases, flammable vapors, or dust.

         e. Through walls and interior partitions by direct flame contact.

         f. Through walls by conduction of heat through beams, pipes, or other objects that extend through walls.

      (2) Vertical extension.

         a. Through stairwells, elevators, and shafts by direct flame contact or by convected air currents.

COURSE OUTLINE	GUIDES

b. Through partitions and walls and upward between the walls by flame contact and convected air currents.

c. Through windows or other outside openings where flame extends to other exterior openings and enters upper floors.

d. Through ceilings and floors by conduction of heat through beams, pipes, or other objects that extend from floor to floor.

e. Through ceilings and floors by direct flame contact.

f. Through floor and ceiling openings where sparks and burning material fall through to lower floors.

g. By the collapse of floors and roofs.

(c) Point of origin.

B. Confining the fire.

1. Confining fire spread.

(a) Fire streams.

(b) Other extinguishing agents.

(c) Ventilation.

COURSE OUTLINE	GUIDES

2. Shut off utilities.

   (a) Gas.

   (b) Electricity (when necessary and advisable).

   (c) Water.

3. Maintain sprinklers.

   (a) Pump into system through siamese connection.

   (b) The chief or officer in charge should be the only person who orders sprinkler control valves to be closed during or after fire extinguishment.

4. Salvage operations.

   (a) Use salvage covers.

   (b) Control water runoff.

C. Extinguish fire.

1. Fire situation.

   (a) Nature of involved fuel.

   (b) Quantity of fuel involved.

   (c) Physical arrangements of fuel.

COURSE OUTLINE	GUIDES
2. Resources available.	
(a) Companies.	
(b) Equipment.	
(c) Water supplies.	
3. Extinguishment procedure.	
(a) Extinguish main body of fire.	
(b) Extinguish area or spot fires.	
(c) Locate and extinguish hidden fires.	
4. Control sprinkler system flows.	
VI. Post-fire Operations.	
A. Overhaul.	Salvage and Overhaul Prac.
1. Place structure and contents in safe condition.	
2. Completely extinguish fire.	
3. Prevent rekindle.	
4. Determine cause of fire.	
5. Provide information for investigators.	

COURSE OUTLINE	GUIDES
6. Restore fire protection systems and devices to service.	
7. Restore structure to livable or tenable condition if possible.	
B. Determining fire cause.	Salvage and Overhaul Prac.
1. Fire hazards.	
2. Fire causes.	
(a) Fuel supply.	
(b) Heat source.	
C. Detecting arson.	Salvage and Overhaul Prac.
1. Observe evidence of arson.	
2. Protect evidence of arson.	
3. Guard evidence of arson.	
D. Subsequent duties.	
1. Have standby manpower and equipment and/or apparatus remain on scene.	
2. Officially release premissis by officer in charge.	
3. Obtain required and necessary data and information.	

COURSE OUTLINE	GUIDES
4. Return to quarters. 5. Service apparatus and equipment. 6. Place apparatus in service. E. Records and reports. 1. Complete fire report forms and records. 2. Write complete fire reports. 3. Log all injuries. F. Portmortem. 1. Conference method. 2. Critique. 3. Examination after fire. 4. Lessons learned. 5. Incorporate lessons into pre-fire plans. 6. Study.	

ALARM RESPONSE FACTORS

- Location & Environment — Address, Building Condition, Exposures, Life Hazard
- Physical Surroundings — Roads, Railroads, Streams, Bridges, Fences
- Nature of Situation — Fire, Explosion, Radioactive Materials, Rescue
- Time & Conditions — Time of Day, Weather Conditions, Relative Humidity
- Own Situation — Running Cards, Pre-Fire Plans, Extinguishing Agents, Fire Apparatus, Private Protection, Water Supply

SIZE-UP

Anticipated

- Alarm Information
- Pre-Fire Plans
- Inspection Information

Visual

- Previous Action - Commitments of Fire Companies
- Immediate Action - Pressing Needs
- Future Course of Action - Supplemental Developments

Rescue or Evacuation

- Probable Life Hazards: Occupants, Personnel, Spectators
- Rescue or Evacuation Situations: Electrical, Cave-ins, F... Panics, Storms, Drownin... Gaseous, Fires
- Available Assistance: Fire & Rescue Equipment; Volunteer or Call Men; Disas... First Wor...
- Contributing Factors: Weakened Structures; Open Shafts or Pits; Gaseous Areas; Mantraps; Explosions; Falling Walls

Exposure Protection

- Exposure Hazard Factors: Building Combustibility; Directon of Wind; Distance Between Buildings; High Temperatures; Building Size; Humidity; Wind Velocity; Heat Quantity
- Sources of Ignition: Radiated Heat, Direct Flame, Flying Brands
- Fire Protection: Building Spacing; Protection Openings; Outside Sprinklers; Fire Walls; Fire Streams; Inside Sprinklers

SUMMARY OF A FIRE FIGHTING PROCEDURE	Course of Action	Use of:	Sprinklers, Pre-Fire Plans, Standpipes, Special Equipment
		Position of:	Aerials, Snorkels, Master Streams, Hand Streams, Pumpers, Hand Ladders
	*Ventilation	Ventilation Needed:	Smoke, Gases, Heat
		Where to Ventilate:	Vertical, Horizontal
		How to Ventilate:	Openings, Forced Air, Water Fog
		Precautions:	Gas Masks, Fire Spread, Exposures
	*Forcible Entry	Means of Entrance:	Doors, Windows, Breaching
		Precautions:	Backdrafts, Mantraps, Damage
	*Salvage	Salvage Need:	Water Damage, Smoke Damage
		Value of Contents:	Merchandise, Furnishings, Records
		How Accomplished:	Use Covers, Control Water, Move Materials
ATTACK, CONFINE, AND EXTINGUISH	Attack Fire	Type of Fire:	Fuel Involved, Free Burning, Smoldering
		Water Application:	Direct, Indirect, Solid Stream, Fog
		The 3 Position Approach:	Exposures, Avenues of Spread, Point of Origin
	Confine Fire	Confine Fire Spread:	Fire Streams, Ventilation
		Shut Off Utilities:	Gas, Electricity, Water
		Maintain Sprinklers:	Pump into System
		Salvage Operations:	Cover Work, Water Control
	Extinguish Fire	Extinguish Main Body of Fire	
		Extinguish Area Fires	
		Locate and Extinguish Hidden Fires	
		Control Sprinkler Systems	
OVERHAUL AND RETURN TO QUARTERS	Overhaul	Preserve Evidence of Arson--Obtain Information	Clean Up
		Extinguish Spot Fires-------Make Area Safe	Police Area
		Determine Fire Cause--------Release the Premises	Return to Qtrs.
	Subsequent Duties:------	Service all Apparatus and Equipment, Report back in Service	
	Records & Reports:------	Fill out Report Forms, Write Fire Report, Log all Injuries	
	Post Mortem:----------	Critique, Examination After Fire, Study, Lessons Learned	

*Operation Items that may be performed anytime that a need is present during a fire fighting procedure.